

## CLAIMS

1. A system for making a tire with a substantially filled core comprising:  
a grinding device capable of grinding cured polyurethane;  
a mixer capable of mixing ground polyurethane and a liquid virgin polyurethane; and  
a pump configured to transfer the material mixed in the mixing device into the core of a tire.
2. The system of claim 1 wherein said grinding device is capable of producing core bits with an average diameter of less than .125 cubic inches.
3. The system of claim 1 wherein said grinding device is a fine grinder, said system further comprising a coarse grinder, said fine grinder disposed to receive ground polyurethane from the coarse grinder.
4. The system of claim 2 further comprising a hopper disposed above said grinding device, wherein said grinder includes an elongated screw blade.
5. The system of claim 4 wherein said grinder further includes a screen plate with a plurality of holes therein, said holes having a diameter of less than about one half of an inch and being disposed to grind cured polyurethane transferred from the elongated screw blade.
6. The system of claim 1 wherein said mixer is subdivided into three sections.

7. The system of claim 6 wherein said mixer includes an elongated rotatable screw.
8. The system of claim 6 wherein material from the primary grinder is fed into the first of the independent sections.
9. The system of claim 6 wherein the first independent section and the second independent sections are used to develop a pressure in the ground material.
10. The system of claim 6 wherein the third independent section additionally comprises an input device for at least a single stream of unused flatproofing material.
11. The system of claim 6 wherein the third independent section additionally comprises multiple input devices for multiple streams of unused flatproofing material.
12. The system of claim 6 wherein the third independent section has a sufficient length to ensure homogeneous mixing of ground used polyurethane and virgin flatproofing material.
13. The system of claim 1 wherein said injector comprises at least one holding tank for at least one unused flatproofing material, a transfer component connecting each holding tank to a mixing apparatus, and a transfer apparatus connecting the mixing apparatus and the mixer.

14. The system of claim 1 wherein said injector additionally comprises a transfer component connecting the mixing apparatus and the pump.

15. The system of claim 1 wherein said pump additionally comprises multiple input sections and a mixer that mixes material received from the injector and the mixer.

16. A system for making a substantially filled tire comprising:

- a grinder;
- a mixer that combines the unused flatproofing material to the ground used flatproof pneumatic tires;
- an injector that injects a mixture of at least one unused flatproofing material into the ground used flatproof pneumatic tires
- a pump for transferring the combination of ground used flatproof pneumatic tires and unused flatproofing material from the mixer to a valve;
- an input device that inputs the combination into a tubed or tubeless pneumatic tire; and
- a pressure sensor attached to said input device.

17. The system of claim 16, further comprising a controller electronically coupled to the injector and the pressure sensor.

18. A system for making a tire with a substantially filled core comprising:

an elongated rotatable screw device capable of mixing the ground polyurethane and a liquid virgin polyurethane and pressurizing and transferring the mixed material into the core of a tire, said screw device having an input disposed to receive ground pured polyurethane from the grinding device.

19. The system of claim 18, further comprising an output adjacent to an end of the rotatable screw device and a conduit coupled thereto for transferring the mixed material into the core of a tire.

20. The system of claim 18, further comprising a controller electronically coupled to the grinding device and the elongated screw device.